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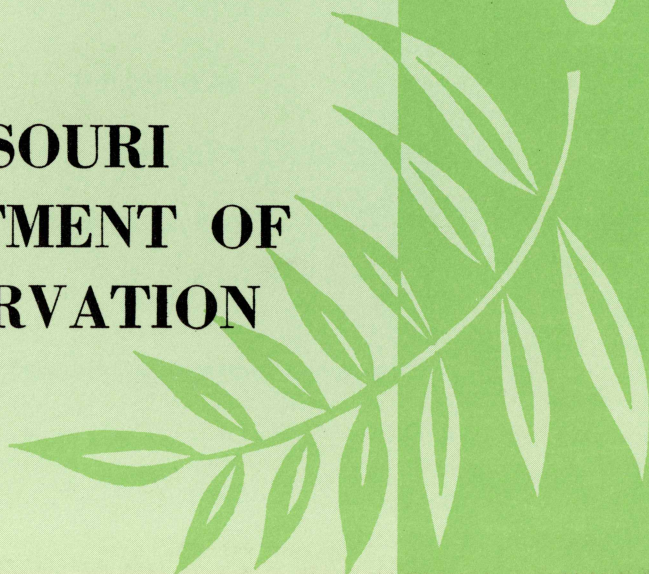
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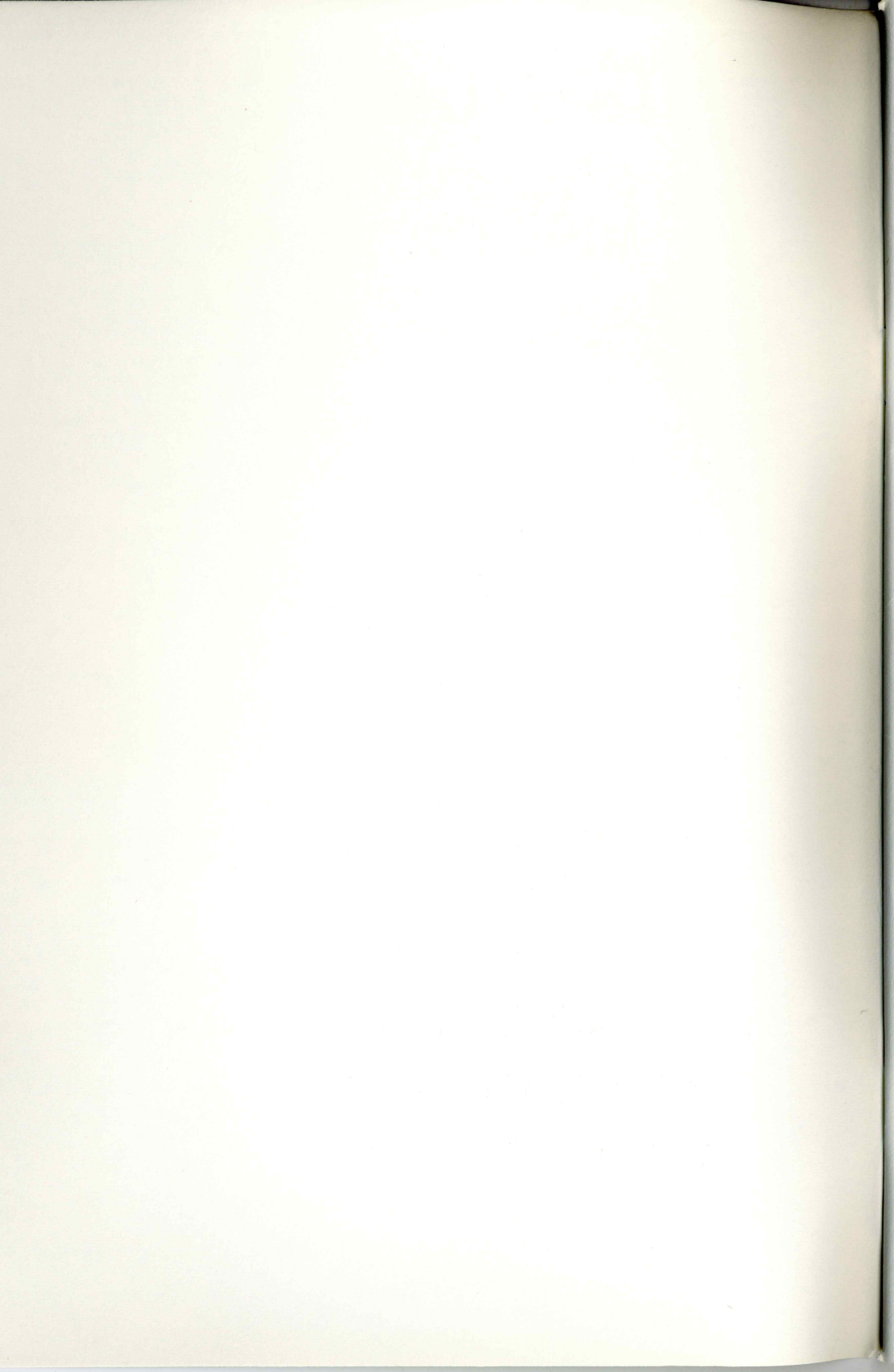
MISSOURI TREES

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CONSERVATION





MISSOURI TREES

by

J. E. Wylie and Ramon Gass

Published by

Missouri Department of Conservation

Jefferson City

1986

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INTRODUCTION

PLEASURE AND PROFIT both can be derived from a knowledge of trees. As a hunter or fisherman, a knowledge of our trees can increase your abilities as an outdoorsman and your pleasure in being in the field. As a timberland owner, knowing trees, where they grow best, and the products for which they are best suited will increase your profit and pride in ownership. In one way or another the trees in our forests, along our streets, on our lawns, or in our homes as finished products, affect the lives of all of us.

Our forests, which cover one-third of Missouri, are made up of at least 140 species of trees. However, many are rare or comparatively unimportant. In this bulletin we have described 37 species of trees which are most important to man and wildlife. All of the major commercially important trees are included. In most sections of the state these 37 species will make up 90 per cent or more of the

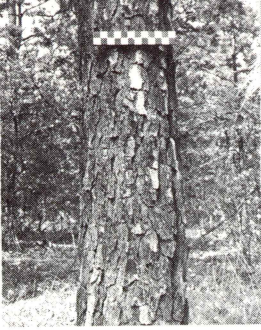
total number of trees in wooded areas.

For those of you who want to go further into the study of trees or dendrology (as it is called), there are a number of excellent references. *Trees of Missouri* by Settergren and McDermott with photos by Tau is the best local text. Published by the University of Missouri, it is available for \$1.50 through the Agricultural Editor's Office, University of Missouri, Columbia, Missouri. On a national basis, *Knowing Your Trees*, published by the American Forestry Association, is probably the best book on trees for laymen. Harlow and Harrar's *Textbook of Dendrology* is the standard text in most forestry schools.

We wish to thank the School of Forestry, University of Missouri, for making all of the identifying photographs used in this book available to us.

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SHORTLEAF PINE

Pinus echinata, Miller

SHORTLEAF PINE, the only native pine in Missouri, is easy to pick out at a distance in the winter when hardwood trees are bare. The dark green crowns of the pine trees lend a welcome color to the otherwise drab grays and browns of the Ozark winter landscape.

This softwood or evergreen tree has *needles occurring in clusters of two and three* along the twig. The needles are actually shed every two years but some remain on the tree year round. This is why it is called an evergreen.

Bull pine or yellow pine are other local names for shortleaf pine. Open grown trees, sometimes called bull pine, grow rapidly and have large bushy crowns. Lumber from these trees warps rather badly and is knotty and low grade. All pines with 2 to 3 needles are called yellow pines while all pines

with 5 needles in a bunch are called white pines.

Shortleaf pine is one of the very few pines that sprout. This feature has saved this pine from near extermination in the Ozarks. When seedlings and saplings are killed by wildfires or cutting, they sprout to form a new tree.

This tree species was a primary source of timber at the turn of the century when millions of board feet were harvested for Missouri's large sawmills in the southern Ozarks. The scene bustled with activity with railroad networks reaching from the woods to the sawmills. Oxen pulled wagons loaded with large pine logs to the mills where railroads were lacking. This was the heyday of the colorful Ozark tie-rafters, floating ties down the rivers to the mills.

Pine cones or burs take two years to mature. *The small winged seeds, which look like miniature maple seeds* are located inside the cone. On dry, windy days in the fall the cones open and the wind-borne seeds may be scattered as far as one-fourth mile. Heavy seed crops occur at three to five-year inter-

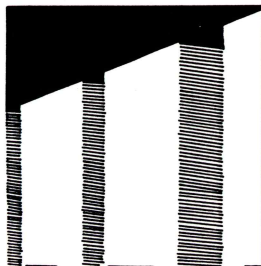
Flowers



Cone



**GOOD
LUMBER
TREE**



vals. It is not uncommon to see even-aged green patches of pine seedlings or saplings surrounding a mother tree in a clearing or an old field.

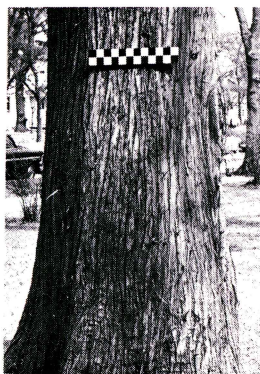
Shortleaf pine is a resin or pitch-forming tree. Because the knots and stumps of pine trees contain large amounts of pitch, they are excellent for starting campfires and fires in cook stoves. As an aid in gigging fish at night, "fat wood" or flaming pine knots were suspended in a metal basket from a "fireboat" to illuminate the water.

Pitchy wood lasts longer in the stump and root since it is more resistant to rot. The wood from this tree is valued highly since it takes chemical treatment easily. This feature makes it desirable for use as fence posts. Pine lumber, poles and posts demand above average prices on the market.

In the natural pine range, this tree may attain a height of 80 to 100 feet. *Pine grows best on dry, rocky, acid soils on south facing slopes and ridge tops.*

BALDCYPRESS

Taxodium distichum, Linn., Richard



Cone



BALDCYPRESS IS A romantic tree. When we think of it we think of dark, mysterious swamps. But while it will grow under conditions too wet for most other trees, it will also grow on high, dry land. It makes a beautiful and unusual ornamental tree. While its natural range in Missouri is the southeast lowlands, it can be grown at least as far north as a line from Hannibal to Kansas City.

Both redwood and the dawn redwood (*Metasequoia*) are related to cypress. It is a very ancient tree with ancestors dating back to the coal age—and might be called a living fossil. With the drainage and clearing of swamps, cypress is much less common today than it was in the past.

Cypress is an “evergreen” tree that is not evergreen. Like the hardwoods, its *needles turn yellow in the fall* and are shed. These needles are a rich green in summer and give a soft, grace-

ful texture to the foliage. When the needles fall, the *raised needle scars make the slender twigs feel bumpy*, which helps identify them in the winter months.

The cone is round with *tightly closed scales which average one inch in diameter*, a key identifying feature.

Swamp-grown cypress are typified by swollen, often fluted butts. The knees, aerial projections of the roots, develop on older trees apparently to supply oxygen to water-logged roots. These knees are often artistically shaped and are frequently used for lamp bases and novelty items.

Soft, beautifully grained and durable cypress wood makes excellent lumber. Both solid and pecky cypress lumber is widely used for paneling and furnishings. It makes fine construction and siding lumber and its durability makes it suitable for use in piers, bridges, and boats.

EASTERN REDCEDAR

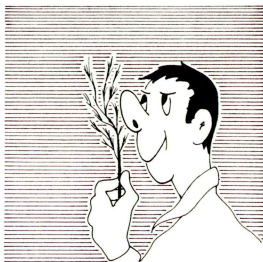
Juniperus virginiana, Linn.

THE FRENCH CALLED IT *baton rouge* or red stick; we call it redcedar; actually it's a juniper. Redcedar will grow on almost any type of soil from the river bottoms to the barest rock bluff. It is found over most of the eastern United States including all of our state. Many variations in form, growth habits and coloration, plus its hardness, have made it an ideal tree for ornamental purposes. There are many varieties which have been isolated and prop-

agated as ornamentals. An old Ozark superstition says that when any cedar tree which you planted grows tall enough to shade your grave, you will die. So commonly has cedar been planted as ornamental in cemeteries, it is sometimes called graveyard tree.

An easy way of identifying this tree is by crushing the foliage and smelling the *attractive juniper odor produced by the flat, scale-like leaves. The outer needles and needles on the new*

HAS A
PLEASING
ODOR



growth are sharp. On older twigs or deeper in the crown they are rounded and smooth. Redcedar has been used many years for Christmas trees because of its shape, its fragrance, and its availability. While it was once a poor man's Christmas tree, custom and the tree's character have made it a permanent holiday fixture in many homes.

Redcedar trees, with the help of the birds scattering the seed, are quick to invade abandoned or poorly managed pastures. Their round, tear and column shapes stand out like ghosts on a bright landscape on a moon-

lit night. *In summer*, these trees have a deep *emerald green* color, but *in winter* outer branches and exposed trees turn a *copper yellow to rusty brown* color.

Bright waxy-blue berries are borne on female trees. The sexes are separate in all junipers. Oil from these berries is used to flavor gin.

Fragrant oils permeate the rich, red-colored wood. Since this odor repels moths and adds a welcome woodsy fragrance to clothes, redcedar is widely used for cedar chests and closet paneling. Some cedar is used for furniture. Cedar novelties



Fruit



are almost trademarks of the Ozarks. Missouri is the leading producer of cedar novelties which are shipped all over this country and exported to some foreign countries. Because of its durability many cedars are used for fence posts. In the past, when it was more abundant, it was widely used for fence rails and later for pencils.

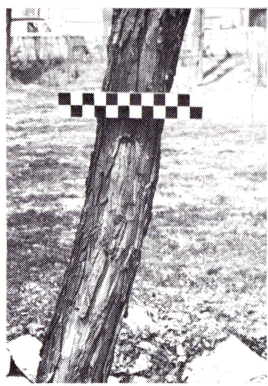
Redcedar's versatility extends still further. It is an excellent wildlife tree. Berries are sought as winter food by many songbirds. In turn the birds spread the seed when it passes through their digestive tracts. Farmers often struggle to keep it out of fence rows and pastures where the birds later roost. Doves and other birds seek the protection of the heavy

foliage for their nests. Many animals use it both as food and shelter in the cold winter months, even deer browse on it heavily in winter. Wildlife plantings should include red cedar, for as a windbreak tree it is hard to beat.

Like all junipers, red cedar is an alternate host to the cedar-apple fungus disease. On wet spring days the orange, jelly-like fingered balls become apparent on many cedars. These are the spore forming organisms of the fungus. In theory, no cedars should be planted within a mile of apple orchards. However, it is usually necessary to spray apples anyway and any good fungicide will control the disease.

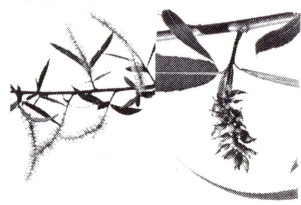
BLACK WILLOW

Salix nigra, Marsh.



**Male
Flowers**

**Female
Flowers**



THERE ARE NINE DIFFER-
ENT willows in the state and
all have one thing in common:
they aid in stream bank stabili-



zation. Willows are pioneer, sun loving trees that are the first to become established on sand bars. Only black willow reaches commercial size. *The bark of the root is intensely bitter* and has been used as an ingredient of tonics to purge the blood. Usually black willow is a rather small tree, but under good conditions *it may grow to 70 or 80 feet in height and two or more feet in diameter.*

Willow trees are either male or female with flowers of different sexes borne on separate

trees. *The female flower hangs in long clusters or aments.* The seed is carried far and wide by wind and water.

Light and flexible willow wood is used for wicker-work furniture and baskets. It does not split when nailed. Before the discovery of plastics, toys were made from willow. Artificial limbs, packing cases and some furniture parts are also willow products. Its warm brown tones and attractive grain make it a beautiful paneling wood.

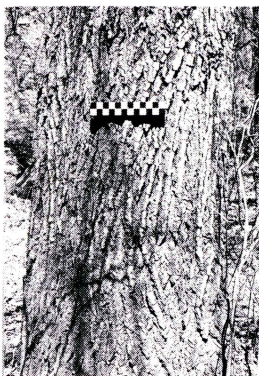
EASTERN COTTONWOOD

Populus deltoides, Bartr.

COTTONWOOD IS OUR fastest growing native tree. It is a member of the poplars and is widely distributed over Missouri along rivers and streams. *It will not tolerate shade and can often be seen growing in pure stands on flood land.* Because of its rapid growth and excellent quality many

landowners are establishing cottonwood plantations. Cuttings made from cottonwood twigs will take root when they are planted in moist soils. Cottonwood shares this characteristic with the willows. Swamp cottonwood (*Populus heterophylla*), is also native to Missouri.

Cottonwood gets its name



**Male
Flowers**



**Female
Flowers**



from cotton-like fluff in which the seed is enclosed. These seeds are released from little pods hanging in long clusters. They are widely scattered by the wind, often accumulating in drifts. Near homes these can be a nuisance. Male or female flowers occur on separate trees. For ornamental uses only male trees should be planted. Flowers bloom just before the leaves come out. Yellowish-green, drooping clusters (aments) of flowers mark the female tree. Male blossom aments are a rusty red. *Long, sharply pointed terminal buds, covered with a rosin or wax-like substance, help identify the twigs.*

A part of the Latin name of cottonwood describes the leaf shape, *deltoide* or triangular shaped. *Leaves are alternate in arrangement and borne on long, flattened petioles.* In the slight-

est breeze, the leaves move from side to side. *The base of the leaf is flat to broadly rounded. The edge or margin has rounded teeth and is thick and shiny above and pale beneath.*

Cottonwood is one of the more valuable commercial timber trees in Missouri. Under good conditions, a cottonwood tree will grow 50 feet high and 8 inches in diameter in as little as six years. The wood is light in weight but strong. It is odorless, white and tasteless. We use this wood often without knowing it. Kite sticks, ice cream sticks, baskets, soda pop cases, strawberry boxes, wire bound boxes, excelsior and pulp and paper are only some of the products for which it is used. More veneer (thin slices of wood) is made from this species than any other tree in our state.

BLACK WALNUT

Juglans nigra, Linn.

WALNUT IS UNQUESTIONABLY the finest wood in the world. It is the Cadillac of woods. Our forefathers sought it out and used it lavishly in their homes, barns and fences. The warm brown wood finishes beautifully. It is easy to work, yet durable. It shrinks and swells less than any other wood, which makes it valuable to cabinet makers and gunsmiths alike.

Practically everyone recognizes a walnut tree when the nuts are on it. Their distinct shape, pattern and smell are hard to miss. The stain the hulls leave on your skin when you

hull walnuts is hard to get off; pioneers used this to dye their cloth. There are other distinctive characteristics to identify the tree in other seasons and at ages when it is too young to bear fruit. A sure method is to cut through a twig at an angle and check the pith. *This pith is chambered* — somewhat like a honeycomb. Only black walnut and butternut — a close relative — have pith like this. *Walnut pith is brown* and butternut is buff colored. *The rather large, horse-faced leaf scars* on the twigs, the large naked buds (no scales cover the embryonic leaves), and the smell of the



**Male
Flowers**



Walnut



souri on a variety of soils. However, it grows best on the deep, well-drained soils of north Missouri and on alluvial soils in the south. Usually *it occurs as scattered trees or in small groves.* Strangely, walnut roots transmit a growth-inhibiting chemical

bark and twigs are other easy ways to identify it.

Missouri has been the leading state in the nation in the production of walnut logs and lumber for 50 years. Today large quantities of walnut logs are shipped to Japan, Germany, and Italy. Always in demand, prices for walnut trees now are higher than ever.

High quality logs are made into veneer. Slices of wood $1/28$ th of an inch thick are glued to cheaper woods to make it economically possible for all of us to buy walnut furniture and paneling. Demand far exceeds supply. We use both veneered and solid in our finest furniture. Its strength, stability and beauty make it unexcelled for gunstocks, too.

Hickories and pecans are first cousins (botanically) to walnut.

Walnut grows throughout Mis-

souri which keeps many other trees and plants and even its own kind from growing near it. Blue grass, however, thrives in the light shade of walnut.

Every farm in the state should have a few walnuts. Work should start early to grow high quality trees which the market demands. Young trees two to four inches in diameter should be pruned and formed. Inferior trees crowding the walnuts should be removed.

It should be enough to have a tree with such superb wood. Walnut has a double value, though, over a million dollars is paid each year for the nuts. The richly flavored nut meats are used by bakers, candy and ice cream makers. The uses go even further. The hard shells are used as ornaments, and pulverized, they are used to drill oil wells,

clean jet engines and to make activated carbon (a type of industrial charcoal used in a variety of ways). During World War II, gas mask filters were

made from this activated carbon. Wildlife loves the walnut, too.

Get to know walnut. Plant it. Care for it. It is Missouri's most valuable tree.

SHELLBARK HICKORY

Carya laciniosa, Michx., Loud

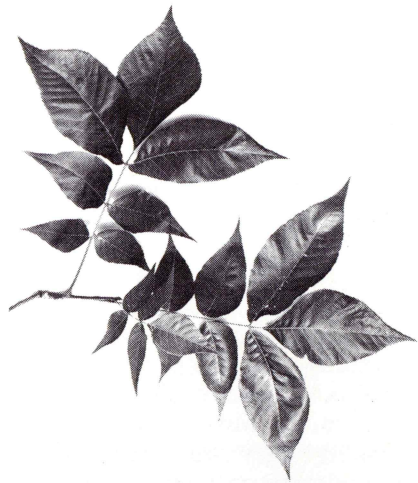
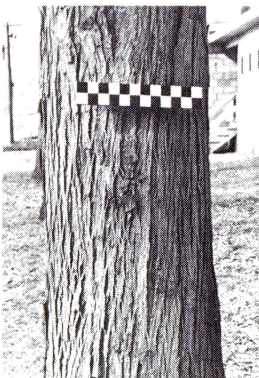
EDWIN JAMES, A BOTANIST and geologist with the Long Expedition of 1819, noted various tree species during his travels through Missouri. Among these, he mentioned the Bottom or Big Shellbark Hickory. In many locations in the state, shellbark hickory truly grows to be a giant among trees. Although it grows over most of the state, it is ordinarily not found in the Ozark region. It grows on deep, rich soils along rivers and smaller permanent watercourses. Shellbark hickory can often be found growing along with bur and pin oak, cottonwood, green ash, silver maple, and American elm.

The leaf is compound, borne alternate and is one to two feet long. The number of leaflets range from 7 to 9, each 5 to 9 inches long and 3 to 5 inches wide. The top leaflet is usually

widest. They are finely toothed and are dark green and smooth above and pale yellow-green and velvety beneath.

The large nut ranges from 1 to 2½ inches in diameter with the husk being up to ½ inch thick. It is oblong and somewhat flattened, with four prominent ridges. Because the kernel is large and sweet, it makes fine eating as well as furnishing a source of food for squirrels and other wildlife.

Shellbark has the largest



Nut

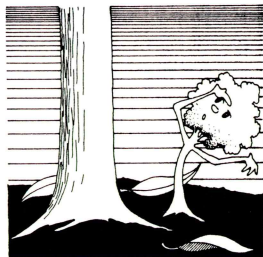


Shaggy
Bark



LARGEST OF

THE HICKORIES



leaves and fruit of all the hickories. Early settlers used this tree as an indicator of good soil. Because of land cleared for agriculture, shellbark has become relatively scarce.

Twigs are stout, orange-brown and are usually densely hairy. There are light spots scattered over the young bark. Buds at the end of the twigs are elliptically shaped, covered by several

loose brown scales. Bark on the mature tree is gray with broad loose plates forming a shaggy appearance. The bark very much resembles that of shagbark.

The largest shellbark hickory in the nation is growing in Big Oak Tree State Park in southeast Missouri. It is 12 feet 9 inches in circumference, 122 feet high and has a spread of 70 feet.

SHAGBARK HICKORY

Carya ovata, Mill., Koch.

PRESIDENT AND GENERAL Andrew Jackson's strong, tough and resilient character inspired his troops to affectionately nickname him "Old Hickory" after the tree with the same qualities. There are other hickories, of course, but when we think of hickory most of us think of the shagbark hickory. The only other hickory with which it might be confused is shellbark hickory. The latter has very large nuts and is found growing only on bottomlands. Shagbark most commonly grows in the uplands, but it will grow in bottomlands too.

A key identifying feature of shagbark hickory is *its loose, scaly bark which separates into plates up to a foot long.* It hangs down from the trunk like loose

shingles and can be peeled with the bare hand.

The shagbark hickory nut is 1 to 2 inches in diameter. Surrounding the nut proper is a thick husk or coating from $\frac{1}{4}$ to $\frac{1}{2}$ -inch thick. The nut is globe-shaped and slightly longer than broad. The husk separates into four separate pieces.

The compound leaves, measuring 8 to 14 inches long, are borne alternate with 5 leaflets. They are elliptical, broadest near the tip and toothed on the edges. The upper surface is dark yellow-green and smooth while the under surface is pale and smooth to finely hairy. The first frost changes leaves to a golden yellow.

Shagbark hickory wood is tough and will withstand and



Nut



absorb shock. Because of these properties, implement handles, wagon stocks and sporting goods are manufactured from hickory. Second-growth trees are favored for this. Hickory smoked hams and bacon are famous and hickory wood smoke imparts a delightful flavor to many other foods. Barbecuers use green hickory chips on their charcoal fires to add zest to their epicurean masterpieces. The charcoal itself frequently is made from hickory.

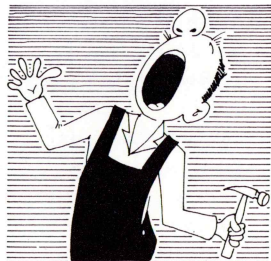
This tree is represented all over the state but grows best on deep, moist soils. Other hickories

found in various parts of the state include the pecan hickory (*C. illinoensis*, Wang., Koch.), water hickory (*C. aquatica*, Mich. f., Nutt.), pignut hickory (*C. glabra* Var. *glabra.*), and black hickory (*C. texana*, Buckl.).

Flavorful kernels or nutmeats are used in candy, cake and cookies. Wild forest animals, particularly squirrels, use this nut as a source of food.

Shagbark seldom exceeds 80 feet high or 30 inches in diameter. Another name for it is scalybark hickory.

**MAKES
GOOD
HANDLES**



BITTERNUT HICKORY

Carya cordiformis, Wang., Koch.

THERE ARE SEVEN READILY recognizable hickories in Missouri but *bitternut hick-*



edges. These leaflets are supported from hairy stalks and are dark yellow-green and smooth above, pale and slightly hairy below.

In winter, this tree can be identified by its slender, pale gray twigs which are dotted with corky rises. The bark is nearly smooth and light gray when young, remaining on the trunk for several years. As the tree ages the bark becomes shallowly furrowed with thin interconnecting ridges.

Small bitternut hickory trees will grow in dense shade under



Nut

ory is the only hickory tree which has long, sulphur-yellow colored buds. It is widely distributed over the state.

The nut is nearly globe-shaped and covered by a thin husk which is partially winged along the lines where it splits. The kernel is bitter but the squirrels don't seem to mind it. For them it is an important winter food which they store in hollow trees and bury in the ground. Forgotten buried nuts become new trees.

The leaf, ranging from 6 to 10 inches long, is compound with 7 to 9 elliptically shaped leaflets. They are usually broadest above the center with toothed



the tops of sugar maple, white oak, white ash, and black walnut among others and still survive. It is a moderately fast growing tree, but short lived compared with other hickories.

Bitternut hickory wood is used to some degree in making

handles, but is used largely for making charcoal for outdoor barbecuing. This wood smoke gives meat a rich flavor and aroma. Some meats are smoke

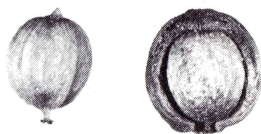
cured with hickory because of its distinctive taste. It also makes an excellent fuelwood for cook stoves, furnaces or fireplaces.

MOCKERNUT HICKORY

Carya tamentosa, Nutt



Nut

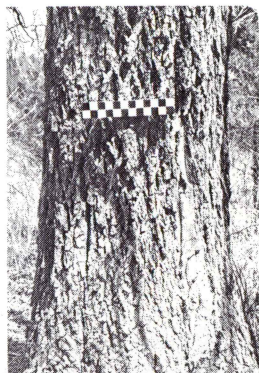


The large round nut has a thick, strong scented 4-valved husk. When ripe, the husk splits nearly to the base. The kernel is sweet, dark and edible. Squirrels scavenge the woods for this sweet, edible nut as a source of food.

Buds are egg-shaped, with the outer bud scales dark reddish-

MOCKERNUT HICKORY was first described as early as 1640 by an English botanist. Colonists noticed mockernut first because it grew abundantly on the east coast. Indians processed the nut. By subjecting it to beatings and boiling, Indians realized "a fine oylie or mylke liquor."

The compound leaf is borne alternate, with 5 to 7 leaflets which are from 8 to 12 inches long. A crushed leaf smells like a piece of orange rind.



brown, falling soon after they are formed. The inner scales are yellow to tan and silky.

The bark is gray with furrows being close and deep.

The wood is in demand for axe, pick, hatchet and hammer handles as well as for the manufacture of skis and other athletic equipment.

THE OAKS

Quercus

OUR OAKS ARE SO IMPORTANT both in number and value that they should first be considered as a group. Oaks, by far, are the most important trees in Missouri. There are 19 species and at least 16 hybrids of oaks found in our state. Most of our forest products industry, including flooring, barrel staves, pallets and railroad ties, is based on the oaks. Oaks are also the most important hardwoods in North America. Only three other species or groups of trees—all conifers—exceed them nationally in lumber production. Here in Missouri our oak saw timber volume of 8.3 billion board feet represents 63% of all our saw timber.

Much of our heritage and culture has been influenced by the oaks because of their unique qualities and sheer abundance. In ancient times man not only admired but actually worshipped oaks. When the iron men went down to the sea in wooden ships, the ships were made from oak. The British Empire was built on its men and its oaks. Oaks live, too, in legend and history: The old Oaken Bucket, the Charter Oak, and even in Robin Hood's Sherwood Forest.

Oak mast (acorns) is of tremendous importance to deer, squirrels, turkeys and other wildlife.

The oaks, which are related to beech, chestnut and chinquapin, have several distinguishing characteristics. The fruit is the familiar acorn—a staple food for

many species of wild animals. Leaves occur singly on alternate sides of the twig. *Large pores are found in the springwood and rays of wood radiate from the pith. Next to the acorn the best identifying characteristic is the cluster or groups of buds found at the end of the twigs. The star-shaped pith of the twigs is characteristic also.*

The larger family of oaks is divided into two groups. This aids greatly in identification by automatically eliminating the species in the other group.

The white oak group, called botanically *Leucobalanus*, is one group. In this the white oak, *Quercus alba*, is the predominant species. It also includes post, bur, swamp white, chinquapin, over cup, and swamp chestnut oak. These species provide the so-called sweet mast. Their acorns mature in one year, are less bitter, and germinate in the fall. Buds are rather rounded. The bark is light grey in color and rather flaky. Leaves are lobed or wavy along the edges but *the lobes and ends of the leaf are rounded and smooth.* The wood cells of these trees are coated inside with a plastic-like substance called tyloses. This makes the wood waterproof and accounts for its use in barrels, buckets, and ships. White oak wood is most durable.

Erythrobalanus is the name for the red or black oak group. This includes the true black oak, *Quercus velutina*, and also northern red, southern red, pin, shin-

gle, willow, water, blackjack, cherrybark, shumard, and scarlet oaks. The live oaks are usually grouped here, too, although none grow in Missouri. *Red oaks are characterized by the little bristles or spine-like tips at the end of their leaves or lobes.* The leaves may be lobed or entire as is the case with shingle, willow and water oaks. Even in this latter case, bristles are at the tips of the leaves. Buds are pointed, bark is dark grey to black. It is rather rough and

ridged rather than flaky. Acorns take two years to mature and they are bitter with tannin. They germinate in the spring. Red oak lumber is important for flooring and other uses, but it is neither very durable nor waterproof.

Space will permit us to describe only eight of the most numerous oaks in our state. Even so about half of all the trees you will find in Missouri's woods will be one or more of these eight species.

WHITE OAK

Quercus alba, Linn.

WHEN POEMS ARE WRITTEN about the mighty oak, the author usually is referring to the mighty white oak, gigantic in form, steeped in legend and valued highly by lumbermen. The decks of "Old Ironsides," part of a great American heritage, are constructed from white oak wood. White oak was used

extensively in ship construction because of its strength, durability, and waterproof qualities. So important was white oak to the early colonists that extensive areas of white oak were set aside in the south to be used only through royal approval. White oak is one of our longest lived trees. Some, still growing,



Acorn



started life about the time the Mayflower reached the shores of Plymouth.

The leaf is alternate and simple with 7 to 9 rounded lobes reaching nearly to the center. It is bright green above and pale below, turning a dark red or purple wine color in autumn. Sometimes leaves remain on the tree through the winter.

White oak acorns are about $\frac{3}{4}$ of an inch long and enclosed one-quarter of its length by a warty cup. They make choice food for most forest wildlife species. One authority estimated that it takes 10,000 acorns to produce one tree. All the rest are consumed.

Young stems are smooth and shiny gray. Bark on older limbs and trunk is ashy-gray, broken into long, loose scales. Buds are globe-shaped, clustered around the tip of the branch.

White oak is one of our most ubiquitous trees, being found in every county in the state. In terms of value it is our most important tree. Its lumber is second only to walnut in unit value.

An important use for white oak is in the barrel or cooperage industry. This wood is particularly desirable for the manufacture of barrels because it has properties which make it leak-proof. Many thousands of miles of white oak fence posts cross and recross our state. Fine golden and limed oak furniture is made from rift-cut white oak. Other products from white oak include railroad ties, pallets, flooring and paneling. The finest logs are made into veneer for plywood, paneling and furniture.

White oak grows under a variety of conditions and while it grows best on good soils, it is found most often on medium forest soils. In our river hill counties it sometimes forms nearly pure stands. More commonly it grows in association with other oaks and hickory.

This tree is hard to transplant because of its long tap root. Once established in a yard, it may become a giant of a tree reaching a height of 100 feet and a diameter of four feet and over.

POST OAK

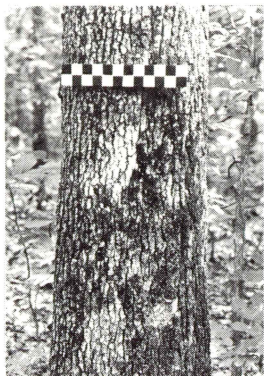
Quercus stellata, Wang.

SAWMILL MEN GROUP POST OAK with other white oaks in the manufacture of lumber since the wood properties are similar. Woods fires scar the trunks of trees, exposing live wood. This makes an easy opening for decay to hollow the center of wounded trees. As a result of this decay final gross board-foot volume is reduced.

Probably the key identifying feature of post oak is its cross-

shaped leaf. Being alternate and simple, it usually has five lobes, is shiny green and fuzzy yellow below.

The acorn is $\frac{3}{4}$ inch long and $\frac{1}{2}$ inch wide. It is enclosed for about one-third of its length in a bowl-shaped cup. Forest wildlife such as the gray and fox squirrel, raccoon, quail, deer, wild turkey and ruffed grouse make this acorn a part of their diet.



Acorns



Twigs are moderately stout, orange-tan in color. They are woolly at first, darker and smooth later. The buds are globe to egg-shaped and woolly. The bark is light brown and divided by deep furrows and scaly ridges.

Found in almost every county

in the state, post oak seldom exceeds 60 feet in height. Many poor timber growing areas support stands of post and black-jack oak. Under average conditions post oak is a very slow growing tree.

Post oak wood is used for the same purposes as white oak except for stave bolts because of defects.

BUR OAK

Quercus macrocarpa, Michx.

SIOUX CITY, IOWA'S, famous council oak is a majestic bur oak that witnessed Lewis and Clark meeting with the Sioux chiefs in 1803. It was 150 years old when its massive spreading branches sheltered the council and it is still alive.

Bur oak is a strange tree found on two distinctly different soil areas. It grows best in the flood plains of our major streams

but it is also one of the few trees to grow on the more moist prairies and plains. Its range extends to the Rockies. It was often a life saver to wagon trains crossing the prairies, being used for wagon tongues, wheel hubs and spokes as well as a welcome relief from buffalo chips as fuel.

The leaf is six to ten inches long, alternate, simple and spatula shaped with its broadest

width near the end. It is shallowly cleft on the outer half and rather deeply cleft near the base. Above portion is dark green while the under-surface is downy and pale.

A mossy fringe of elongated scales on the edge of the acorn cup accounts for the name mossy-cup which is sometimes given to bur oak. Acorns from bottomland trees are the largest of any oak. They will be from one and one-half to two inches long and are about half-enclosed

by their cup. Prairie bur oak acorns are only three-fourths to one inch long and are often enclosed for three-fourths of their length.

Corky, thick twigs are a key identifying feature which can be seen even from the ground. This is the only oak with this thick corky bark on the twigs. The buds are egg-shaped.

Bark on the trunk is gray-brown. It is thick and deeply ridged at maturity.

Bur oak is the state's largest tree. Missouri has the world's record bur oak. This giant tree growing in Big Oak Tree State Park in Mississippi County is 23 feet, 5 inches in circumference, and 128 feet, 10 inches high. If space permits, it makes a magnificent shade tree.

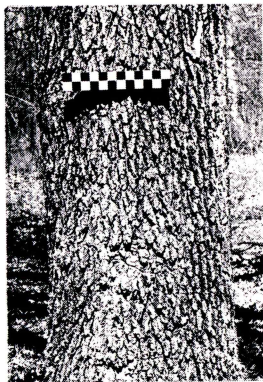
Lumber from this species is used for all of the same products made from white oak lumber except veneer.



Acorn



Corky twig



NORTHERN RED OAK

Quercus rubra, Linn.

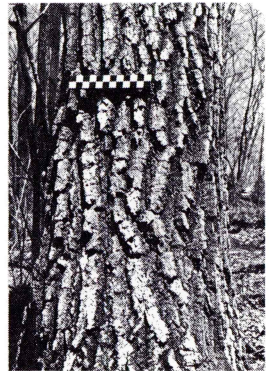
IN THE SOUTH PART of the state, northern red oak grows on north and northeast slopes where sufficient soil moisture is available. It becomes a dry upland species in north Missouri. Northern red oak is one of our more rapid growing oaks and its lumber is of higher quality than the other red and black oaks.

Leaves are alternate and simple with 7 to 11 bristle-tipped lobes being cut halfway to the midrib. They are 5 to 9 inches long and 4 to 6 inches wide, with

the upper surface being smooth and yellow-green and the under surface smooth with occasional tufts at the intersection of the veins.

The acorn is about one inch long, oblong and hairy at the cup end. The cup encloses about $\frac{1}{4}$ to $\frac{1}{3}$ of the acorn. The squirrel, raccoon, quail, deer, ruffed grouse, wood duck, black duck, gadwall, and green-winged teal make this acorn a part of their diet.

Twigs are slender, reddish-brown, slightly hairy at first, becoming smooth. Bark on younger trees is dark brown or



black and smooth. Bark on the upper trunk is rough and shallow fissured with broad, smooth streaks while bark on the lower trunk is grey to black and deeply furrowed. Buds are reddish and fringed with hair.

Bridge timbers, cross ties,

flooring, and construction lumber are sawed from this tree. Usually it is marketed with the other of the red oak group.

Acorn

Young Bark



PIN OAK

Quercus palustris, Muench.

PIN OAK, OCCASIONALLY called Spanish or water oak, grows throughout the state but is rather rare in the Ozark Region. It is a wet-land tree growing in the bottomlands in most areas but also on poorly drained prairie soils, in fence rows and along draws in the prairie regions of the state.

The branching habit of this tree is one key feature to its identity. Limbs tend to persist on the straight central trunks. *Lower, usually dead, limbs droop, middle limbs are horizontal, and the top limbs slant upward.* This branching habit is also characteristic of the shingle and willow oaks. In silhouette, immature pin oaks have conical shapes. The numerous limbs make small pin knots in the lumber.

Pin oak acorns have vertical stripes with light brown alternating with greenish browns on the fresh acorns. Acorns are nearly hemispherical in shape and are enclosed at the base in

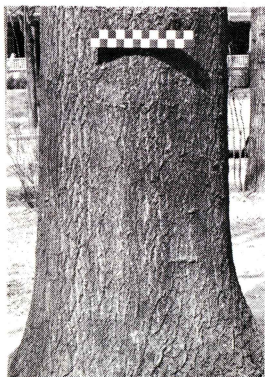
a shallow cup. Since it grows near water, often in pure stands, pin oak acorns are important duck foods. Squirrels, deer and even quail and blue jays relish these nutritious acorns. Biologists recommend pin oak planting in duck management areas.

Leaves of this tree are more deeply lobed and more sharply pointed than any other oak. They are four to six inches long and two to four inches wide. In the autumn the leaves turn a deep scarlet.

Because of its excellent form, hardiness and autumn color-



Acorns



tion, it has become increasingly important as an ornamental tree. It is the fastest growing oak and it will survive on a variety of soils. It also makes a good wind-break tree.

The bark is smooth and shiny in youth, becoming roughened on the older portions of the trunk.

Pin oak is not a commercially valuable tree although the straight trunks do make good poles and pilings in limited quantities. Only limited use is made of pin oak lumber because the many small branches on the tree cause lumber to be knotty. Some use is made of the lumber for pallets and construction.

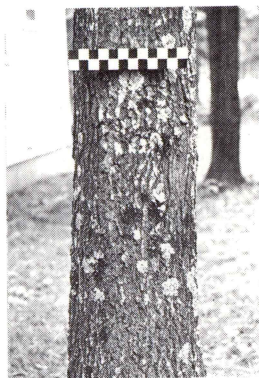
SCARLET OAK

Quercus coccinea, Muench.

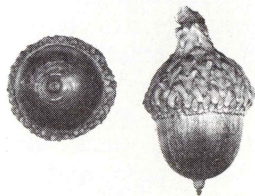
SCARLET OAK IS A COMMON TREE of the Missouri Ozarks, occupying much the same area as shortleaf pine with which it frequently grows. Lumber from this tree makes up a large part of the timber cut. Prolific sprouting and rapid

pure stands on broad, flat ridges in some areas of the Ozarks.

Maturing in two years, like the other black oaks, the acorn is about half enclosed by its cup. *Faint concentric rings around the tip of the acorn* are a key identifying feature. The scales



Acorns



early growth give it an advantage over other species after fires. Usually it grows on the poor, dryer soils in mixture with black, post, and white oaks as well as pine. It forms nearly

on the cup are tight and somewhat shiny. It is a prolific bearer

of fruit which makes it an important wildlife tree.

The leaf is alternate and simple with seven or nine bristle-tipped lobes. Openings between the lobes are deep and round. The name probably originated from the autumn coloration of bright reds and orange. At first the leaves are hairy on both sides and later become smooth and dark green above and smooth and pale with tufts of hair in the intersections of the veins beneath.

The bark is relatively smooth on young trees and on the new wood of old trees. Later it becomes rough and nearly black, divided by irregular scaly ridges. Twigs are slender and hairy at first, turning smooth and reddish-brown later. The buds are egg-shaped and covered with fine grey hairs.

Although the preferred com-

mon name is scarlet oak, local people sometime call it spotted or water oak. Lichens or moss, low forms of plant life, frequently grow on the main trunk of scarlet oak and, contrary to legend, not always on the north side. Streams of oozing sap and water flow from old wood borer holes on the trunk, which indicate defective trees. Trees in this condition are described by foresters as bleeding. Carpenter ants frequently invade wood borer holes to build their colonies.

Because of dead limbs which remain on lower portions of the trunk and serve as infection centers, lumber sawn from these trees frequently is defective. Higher grades of lumber are used for flooring and the lower grades go into pallets and industrial blocking.

BLACK OAK

Quercus velutina, Lam.

THE BLACK OAK IS PROBABLY the most widely distributed oak in the state. It grows on a great variety of sites and will reach commercial saw-log size on almost every soil type. A key identifying feature is the *mustard yellow inner bark*.

Leaves are alternate, simple, with 5 to 7 bristle-tipped lobes, cut deep or shallow. They are 5 to 10 inches long and 3 to 8 inches wide, dark and shiny above and pale and conspicuously fuzzy underneath.

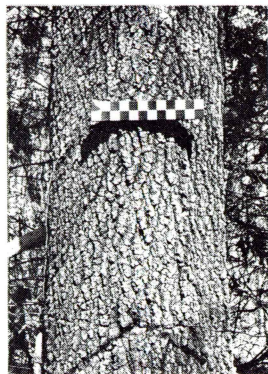
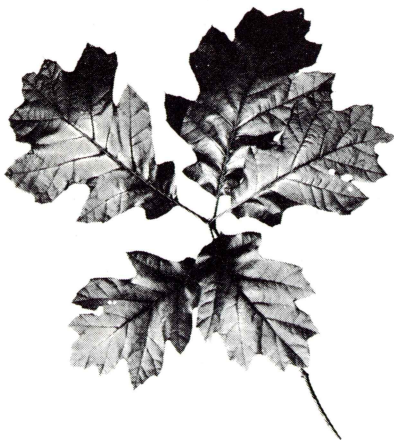
Bark is smooth on branches, becoming black and very rough. The inner bark is mustard yellow and bitter. In early times a

tannin extract was used from this inner bark to tan hides.

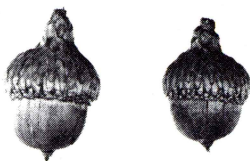
The acorn is oval and enclosed halfway in a deep cup. Although it is not the tastiest food, squirrels, raccoons, quail, deer, turkeys, wood ducks and black ducks will make it a part of their winter diet.

Because black oak is so common, large volumes are harvested. Lumbermen group black oak with the other red and black oaks. Lumber is used for crating, bridge timbers, railroad ties, flooring and rough construction.

Several species of wood borers cause serious damage to black oak trees. These worms bore into



Acorns



a tree and form tunnels, then fungi frequently invade these tunnels and begin to decay the live wood, causing further reduction of clear lumber.

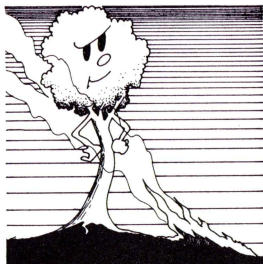
BLACKJACK OAK

Quercus marilandica, Muench.

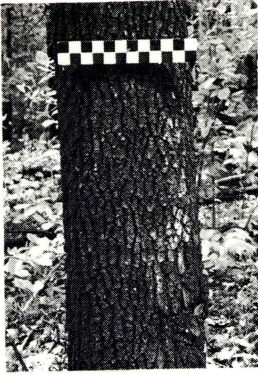
BBLACKJACK OAK IS A common timber tree in forests which have been badly burned or are growing on the poorest soils. Blackjack oak is able to withstand fire because of its thick, insulating bark and its ability to sprout, therefore, it is one of the first trees to occupy an area following a fire. It is a relatively short lived, slow

growing species that cannot grow in shade. In a protected and managed forest, it may all disappear except on the poorest sites.

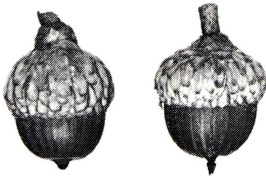
The wedge or bell-shaped leaf is probably the most important key identifying feature. It is alternate, simple, bristle-tipped and shallowly three lobed. The upper surface is dark green and



FIRE DOESN'T
BOTHER ME



Acorns



shiny above and lighter beneath. It is leathery to the feel.

The yellow-brown acorn or nut is enclosed in a deep, thick cup about half its length. Both acorns and leaves furnish food for the squirrel, raccoon, quail, turkey and deer. The kernel is bitter but nutritious.

Twigs are stout and reddish-brown with buds being narrowly

cone-shaped. The bark might be compared to alligator hide with its black, very rough, square or rectangular blocks.

Blackjack seldom grows more than 30 to 40 feet high and is well limbed along the entire length of the trunk. Aside from limited use as charcoal wood, it has little present commercial value. Attempts are being made by foresters to eliminate black-jack oak on suitable areas and replace it with shortleaf pine. Dry, rocky or gravelly soils supporting wild grasses will also support blackjack oak.

AMERICAN ELM

Ulmus americana, Linn.

THE AMERICAN ELM has played a notable role in American history. It remains to be determined whether or not many of the legends of this famous tree are true. The Judgment Tree near Daniel Boone's old home on Femme Osage

Creek in St. Charles County is an American elm. It was beneath this tree that the aging Boone, as a Spanish syndic or judge, dispensed justice to his neighbors in the Femme Osage district.

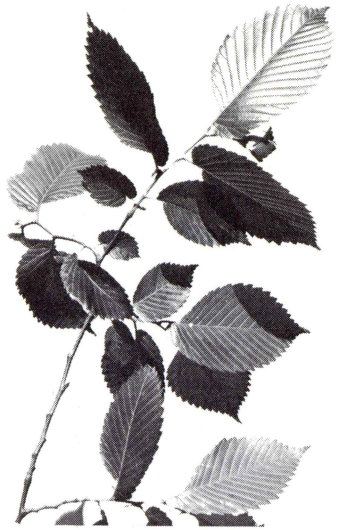
Shade tree owners are prob-

ably more familiar with the leaves of American elm than any other tree. They are simple, alternate with coarse sawtooth edges. On the upper surface the leaf is smooth while the underside is downy. In autumn leaves turn pale yellow. Until all leaves have dropped, the task of raking is practically endless.

essentially a bottomland tree, it will grow under a variety of conditions with some attention. American elm has been planted widely throughout the state for shade. Before the dreaded Dutch elm disease and *Phloem necrosis*, two fatal diseases of most elms, American elm was the all-American shade tree. Thousands



Fruit



The seed is surrounded by a broad notched wing. The seeds, buds, and bark furnish food for squirrels and many songbirds. These abundant seeds can become a nuisance to gardeners and homeowners.

Twigs are slender, reddish-brown, turning grey. Buds are pointed, red-brown, smooth or slightly downy. The bark is grey, rough, furrowed and covered with thin scales, being sometimes corky, white or grey in spots.

Although American elm is es-

of trees in cities and towns have been killed by these diseases. Unless some remedy is found soon, the elms will likely go the way of the chestnut and disappear from the American scene.

Leaf-eating insects riddle elm leaves some years. Wet wood is another bacterial disease within the elm tree, causing white streaks to form on larger limbs and branches when the sap, under pressure, leaks out.

Limited uses are made of elm logs for the manufacture of lumber.

SLIPPERY ELM

Ulmus rubra, Muhl.

EXCEPT FOR SCATTERED counties in the Ozarks, slippery elm is found in almost every county in the state. Like American elm, slippery elm is a water-loving tree and grows best on moist, rich soils on lower slopes, stream banks, river terraces and bottomlands.

The leaf is alternate, simple, with a coarsely double saw-toothed edge. It ranges from

American elm which has a smooth leaf.

The fruit occurs in clusters and each seed and stem is $\frac{3}{4}$ inch long. A single seed is surrounded by a thin, papery wing, smooth around the edge. It is common to see small drifts of elm seeds along sidewalks in metropolitan areas after a heavy rain.

Twigs are slender to moder-



five to seven inches long and two to three inches wide. It is egg-shaped with the broadest part above the middle and the base slightly uneven. The tip is drawn out to a long, narrow point. *The upper surface of the leaf is dark green and very rough while the under-surface is lighter and hairy.* This rough leaf distinguishes it from the

ately stout. They are grey and very rough to the touch. The buds are egg-shaped, pointed and covered with dark chestnut-brown hairs. The bark on older trees is reddish-brown. It is furrowed with platy or scaly ridges and the inner bark contains a sticky sap once used as a medicine by Indians and pioneers.

Like American elm, the seeds, buds, and leaves of slippery elm furnish food for the grey and fox squirrel and deer.

The wood of slippery elm is heavy, tough, and strong. Of all the elms, it has the best and most durable lumber. It is used

in the manufacture of furniture and for many other uses. Because of intertwined fibers, it is hard to split with an axe. Unprotected piles of lumber will twist and warp.

Growing along with slippery

elm may be American elm, black cherry, white ash, blue ash, black walnut, bitternut hickory, bur oak, basswood, silver maple, and white oak. This elm is also susceptible to Dutch elm disease and many leaf-chewing insects.

HACKBERRY

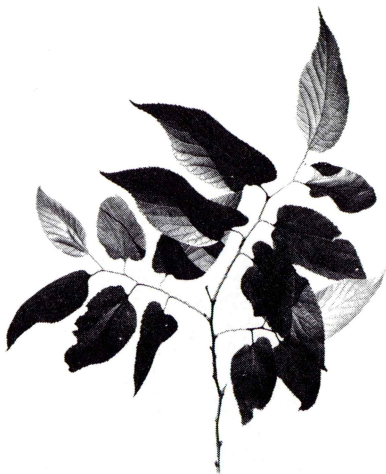
Celtis occidentalis, Linn.

EXCEPT FOR THE OZARK region, hackberry is commonly found in most counties of the state. Probably the best identifying characteristic is the warty bark and elm-like leaf. Although hackberry prefers moist bottom soil situations, it will grow on any moist, fertile area.

The leaf is alternate, simple, with the edge being sharply toothed.

Warty projections decorate the otherwise smooth, grey bark on old portions of the tree.

The fleshy, berry-like fruit, which is suspended on long stems, ripens to a deep purple color in September. The berry usually remains on the tree through winter. It is an important food for wild turkey, flicker, yellow bellied sapsucker, mock-



ing bird, brown thrasher, robin, eastern blue bird, cedar waxwing, cardinal, and raccoon.

Twigs are slender and light brown, becoming grey at maturity. The light colored pith is broken by intermittent chambers. Buds are small and triangular shaped.

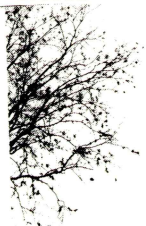
Thick clusters of twigs called witch's brooms are found on many hackberries, particularly open grown or ornamental trees. A mite insect and a fungus are suspected of causing these witch's brooms.

Commercial use of hackberry



Fruit

Witches
brooms



has become rather unimportant. This tough, white, flexible wood

is used for making crates, boxes, furniture, and at one time was used to make barrel hoops.

Because it is able to withstand harsh weather conditions, the U. S. Forest Service recommended planting hackberry for windbreaks in the late 1930's in the southern prairie states. It has also been planted as a shade tree in many areas to replace the elms.

RED MULBERRY

Morus rubra, Linn.



Fruit



ORIGINALLY THIS WAS OUR only mulberry in Missouri. However, early settlers introduced the white or Russian mulberry and cultivated them both for their berries and as fodder for an attempted silkworm industry. Birds have helped spread the white mulberry so much that in many places it is more common than red mulberry. Early explorers

found Choctaw squaws wearing capes woven from pounded red mulberry bark. The fruits were also an important food source for Indians.

Man, in the past and present, has used the mulberries for fresh fruit, jams, wine, and

even ink. The Chinese made the first paper from trees, using the fibers of the inner bark of mulberry.

The leaf may or may not be lobed. It is heart-shaped, 2 to 4 inches wide and coarsely toothed on the edges. White mulberry leaves are similar but smaller and shinier.

The bark on older trunks somewhat resembles that of elm. With age it becomes gray-brown and slightly furrowed.

The fruit looks like a blackberry. It turns from green to red to blue-black when fully ripe. Birds flock to these trees when the fruit is ripe. If a squirrel hunter can find a heavily fruited tree in the spring he is almost assured of squirrels.

It is a small tree seldom exceeding 30 feet in height and 8 inches in diameter. Usually it grows in narrow valleys and on lower north and east slopes. White mulberry, on the other hand, may sometimes grow to

a height of 50 feet and 16 inches in diameter. It is becoming common in bottomlands and is usually the mulberry seen around towns.

The twigs of red mulberry are moderately stout and zigzagged on new growth. The buds are larger than on white mulberry and have a two-toned appearance with green and brown bud scales.

Since the tree is so small it has little commercial use. It is very durable, tough, and makes good fence posts. Game species of wildlife and songbirds find it extremely valuable. Turkeys, grouse, squirrels, raccoons, opossums, foxes, and even skunks eat the berries as do scores of songbirds.

Missouri can boast of having the largest red mulberry in the nation. Located near Spokane in Christian County, the tree measures 14 feet 10 inches in circumference; 38 feet in height, and it has a spread of 73 feet.

OSAGE-ORANGE

Maclura pomifera, Raf., Schneid.

TO THE PIONEER PRAIRIE farmer, Osage-Orange was a godsend. With trees too scarce to make fence rails and woven wire fence not available, Osage-Orange hedges were the only practical way to fence the virgin land. Thousands of miles of these hedges were planted and so common did they become that the very word "hedge" became another name for Osage-Orange. This tree gets its name from the similarity of its fruit (and to a certain extent the twigs and branches) to oranges. Its origi-

nal range was about the same as the Osage Indian tribe in southwestern Missouri and the adjacent parts of Kansas and Oklahoma. Its wood is hard, strong, durable, and resilient, and for those reasons it was widely used for bows by the plains Indians. Early French trappers named it *bois d' arc* (bodark) or bow wood. Pioneer women soon discovered that the bark of the roots made an excellent yellow dye for their homespun cloth.

Leaves are bright, shiny and

oval shaped. They are smooth and leathery to the touch.

Fruit resembles a grapefruit, being a yellowish-green, round, and an aggregate or grouping of many small individual fruits. Squirrels are about the only animals which eat the oranges. Both fruit and leaves have a white, sticky sap.

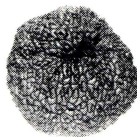
Twigs are slender, light orange in color and bear short, sharp thorns.

Mature bark has the appearance of bands wrapped around a pole, with wide furrows. It has an olive-orange color. The wood is very strong, bright yellow, turning dark upon exposure to air.

Today Osage-Orange has sev-



Fruit



eral important uses. Despite some clearing, there are still many miles of hedges serving as both fences and windbreaks. The wood of this tree is the most durable wood we have in Missouri. Millions of fence posts have been made from Osage Orange and many of these have remained sound for 50 years. In an area so often short of good cover, the hedges have also been a godsend to wildlife. Every farm boy (and a good many men) have hunted rabbits or quail and frequently squirrels which have sought shelter in these hedges. An Osage Orange hedge should be rated as one of our most important wildlife areas.

YELLOW-POPLAR

Liriodendron tulipifera, Linn.

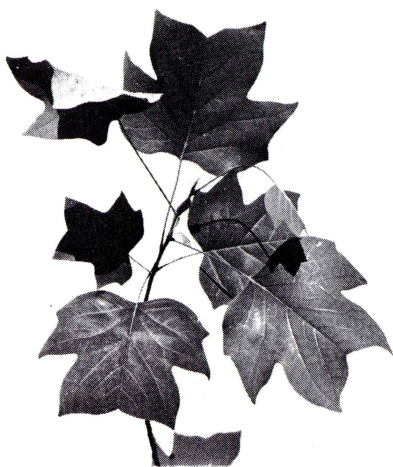
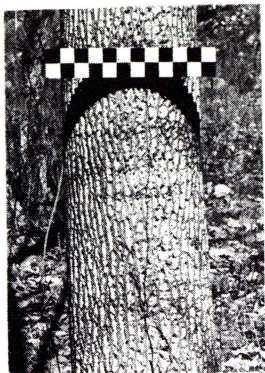
TULIP POPLAR AND TULIP TREE are other names for yellow-poplar. Tulip-like, green-

ish-yellow and orange flowers account for these names, and even *the leaf looks somewhat*

like a cross-section drawing of a tulip. Actually, the tree is not a poplar at all but rather a member of the magnolia family. In Missouri it is native only to the counties in the southeast corner of the state. However, it has been widely planted as an ornamental. On good soils in the Appalachian Mountains it attains its best growth. Growing to a

flower is very showy and attractive. It is two inches across, greenish-yellow, orange and waxy.

The twigs are dark red or brown, moderately stout and often contain a powdery frost-like bloom. They often are smooth and turn shiny with age. The buds are flattened like a miniature duck's bill and valve-



Flower



Fruit



maximum height of 200 feet and 6 feet in diameter, it is the tallest of the hardwood trees. Yellow-poplar will not grow in the shade.

The leaf is alternate, borne simply on long, slender stems with four main lobes. The upper two lobes form a notch. This distinctive shape is shared by no other tree. The surface is dark yellow-green and smooth, while the under-surface is pale.

The fruit is a cone-like cluster of winged, angled seeds. The

like with two large scales.

On good soil, it is a fast growing tree, has excellent form and is disease resistant. The wood of younger trees is light yellow in color. On old trees the heartwood becomes greenish in color. It makes excellent lumber and is easy to work and fasten. It is used for furniture, interior finish, boxes, crates and veneer. It is one of our most valuable trees.

Precautions should be taken to protect the tender young bark of ornamental trees since it is subject to sunscald. Cloth or burlap can be wrapped around the main stem to protect it from

the direct rays of the sun for the first few years.

The yellow-poplar scale is an insect which attaches itself in large numbers to tender young

twigs, removing sap from a small area, forming small breaks in the bark. This insect can become serious since the infested twigs eventually die.

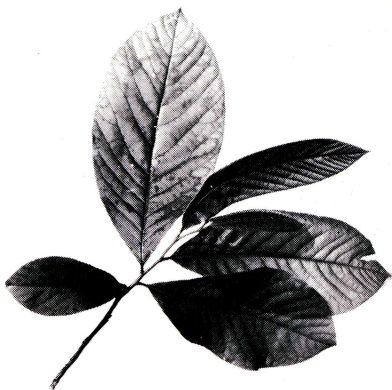
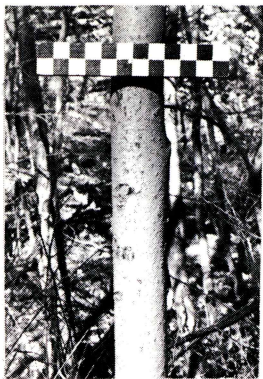
PAWPAW

Asimina triloba, Linn., Dunal.

DESOTO'S EXPEDITION into the Mississippi Valley in 1541 gave us the first written description of the pawpaw. This fleshy fruit provided food for many conquistadores who always seemed near starva-

tastes somewhat like banana. The fruit matures in September or October.

The leaves are alternate, borne simple on a short stalk, sometimes growing from 6 to 12 inches long and 3 to 5 inches



Flower



Fruit



tion.

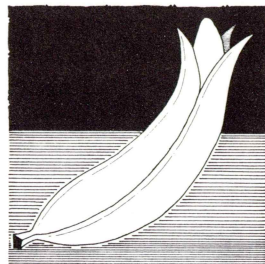
Pawpaw is a member of a tropical plant family and has no close relatives in Missouri.

The fruit is shaped like a stubby banana. It is first green but turns purple when ripe and

wide. They are widest above the middle and taper to the base with the edges being smooth and green above and pale beneath.

In the winter, *this small tree is easy to identify by its velvet brown, naked or feather-like terminal bud*. The twigs are light to dark reddish-brown and the buds are covered with rusty-red hairs. *The bark is smooth*

FRUIT TASTES LIKE BANANA



and thin. It is light ash-colored, warty with blotches emitting a disagreeable odor when crushed.

The exotic flowers with six brown to maroon petals appear before the leaves and are one inch across when mature. They have an odor of fermenting grapes.

Pawpaw can be found growing in dense shade on fertile,

moist soils. It is usually a small tree seldom exceeding 8 inches in diameter and 30 feet in height. The wood is soft, greenish colored, and has no commercial use. Wildlife such as opossum, raccoon, quail, turkey, eastern kingbird, catbird, robin, veery and red-eyed vireo relish the pawpaw fruit. Some people even prepare cakes, pies and cookies from this fleshy fruit.

SASSAFRAS

Sassafras albidum, Nutt., Nees.

SASSAFRAS IS MOST COMMON in the southern half of Missouri, where it attains its greatest heights on deep, moist soils. It can commonly be found along fence rows and as isolated trees in fields. Farmers and other landowners try to keep it out of their pastures. With the help of birds and its ability to sprout, it is one of the pioneer tree species to invade abandoned fields.

The leaves are borne alternate on the stem and vary in shapes and degree of lobing; with none, two or three lobes present. The two-lobed leaf looks like a mitten. The leaf is thick, glossy, and yellow-green above and chalky white below. There are no teeth on the margin.

The berries in autumn look

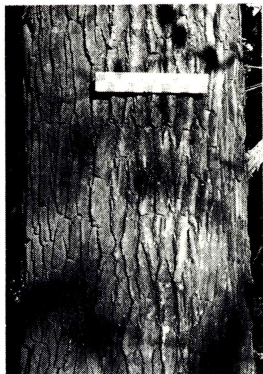
like miniature blue golf balls perched on tee-like, fleshy red stalks.

Sassafras has a uniquely flavored oil in the roots and other parts of the tree. Sassafras tea is of course, famous, but not many know that it is also the principal flavoring in rootbeer. In early spring the tender roots can be dug, cleaned, and dried or boiled green. After splitting into several pieces the roots, boiled in water, yield a tea which the early settlers used to thin out the blood. It was an old Indian medication. It was believed by some Chinese, Indians, and certain Americans that a plant with a strong pleasant smell wards off evil spirits.

Aside from its unique appearance and unusual characteristics,

the berry-like drupe furnishes food for squirrels, quail and wild turkeys.

Usually sassafras grows in such poor soils that it seldom reaches commercial size. When it does, however, it makes good lumber which is avidly sought by Ozark guides for boat paddles. It is used also to build boats



Fruit



and it makes beautiful paneling. Quite durable, it is often used for fence posts.

SWEETGUM

Liquidambar styraciflua, Linn.

SWEETGUM WAS FIRST mentioned in the annals of Don Bernal Diaz del Castillo who accompanied Cortez in 1519 on the conquest of Mexico.

A witness of the ceremonies between Cortez and Montezuma recorded that "after he had dined, they presented to him (Cortez) three little canes, highly ornamented, containing liquid amber, mixed with an herb they call tobacco, and when he had sufficiently viewed and heard the singers, dancers, and buffoons, he took a little of the

smoke of one of the canes."

The fruit is a prickly cone-like ball about 1½ inches in diameter which disperses small pepper-like seed in the fall. Frequently Christmas tree ornaments are made from the round "cones" by dipping them into various colors of paint.

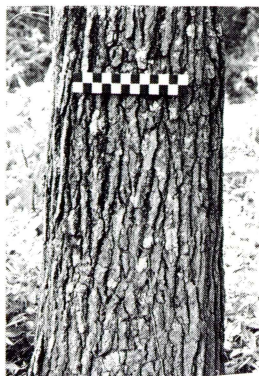
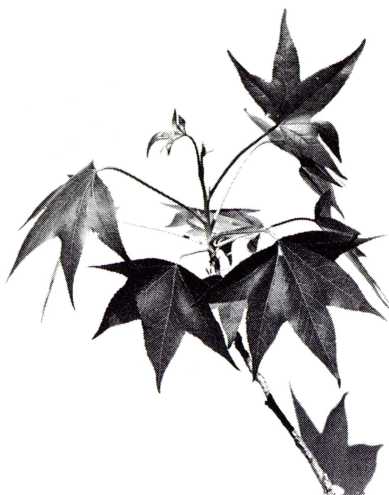
Leaves are star-shaped, about as broad as they are long, and are borne alternately on the twigs. When crushed, the leaves are mildly fragrant. In the autumn the leaves turn a golden yellow to Burgundy red. The

star-shaped leaf makes this tree easy to identify.

The bark is light grey, roughened by corky scales. Older

twigs have corky wing-like growths on their bark.

The wood from an old growth tree has a high proportion of



Fruit

Corky twig



reddish heartwood. Lumbermen sometimes refer to it as redgum. Few American woods equal sweetgum in beauty of natural grain. On the hardwood lumber markets, it is second only to the oaks for volume produced. It is used for veneer, furniture, doors, interior trim, pulpwood and many other uses. Storax, used in tobacco curing, is derived from the sap or gum which is collected in parts of the South.

Sweetgum is native only in southeast Missouri, usually growing on overflow lands. Fre-

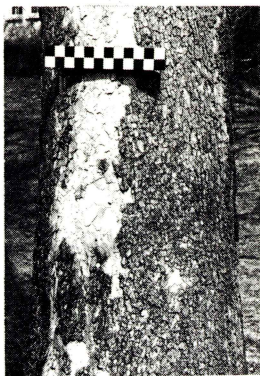
quently it grows in pure even-aged stands. The largest sweetgum on record in Missouri is 112 feet high and 16 feet in circumference. It is growing in a pasture near New Madrid. Sweetgum, with its brilliantly colored leaves, rapid growth, and conical crown, makes an excellent ornamental tree.

AMERICAN SYCAMORE

Platanus occidentalis, Linn.

ONE CAN STAND ON a high ridge in almost any county in the state, scan the view to a

distant valley and trace the main streams by following the *white, often green and spotted,*



Upper bark



Fruit



branches of the sycamore. Because of its variegated bark, sycamore is as attractive in winter as it is in summer. No other American hardwood exceeds it for girth. Several trees seven feet in diameter have been reported in Missouri and, nationally, a 14-footer is champion.

The button ball fruits contain many seeds tightly bunched together. About the size of golf balls, these fruits hang on long stems throughout the winter, scattering their seed in early spring. The single seed containing a fuzzy projection is dispersed by both wind and water.

Leaves borne alternately on the twigs are roughly 3 to 5-lobed and have a coarse toothed margin. Leaves which are shade grown are usually much larger than those grown in the sun.

The bark is smooth, greenish-grey in color on young trunks and limbs. The outer bark yearly flakes off in large patches, exposing the nearly white underbark. At the base of the trunk the bark is brown and broken into small, flat scales. Sycamore wood is tough and moderately hard; however, its use in construction is limited because it has a tendency to warp unless it is carefully dried. Sycamore lumber is used for drawer sides, furniture, butcher blocks, and other uses. Quarter sawn sycamore makes particularly beautiful paneling.

Because of its high resistance to industrial fumes and rapidity of growth it has been used extensively for shade tree plantings along streets.

Sycamore matures early and older trees are apt to be hollow. Many raccoons and squirrels raise their young in these trees. They remain useful even in death when they fall into streams and become favored nesting sites for fish.

HAWTHORN

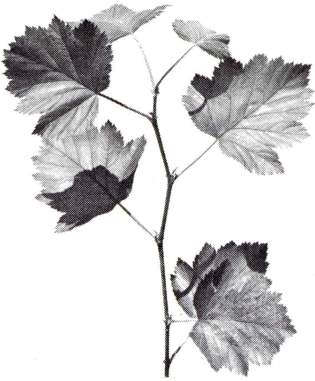
Crataegus sp.

OUR STATE FLOWER, the hawthorn, is solidly represented in Missouri. There are approximately 100 different kinds of hawthorn which occupy almost every kind of soil in every part of the state. A member of the rose family, it is closely related to the apple.

It is a pasture tree. Cattle shun it because of its thorny

branches. Songbirds love it though for those same branches. The flat, thorny branches offer protected nesting sites and the berries are an important fall and winter food.

Hawthorn occurs most often as a small, shrubby tree; it often has two or more trunks. The short, stunted appearance gives the impression that the tree



Flower

Fruit



DOWNY HAWTHORN



Flowers



FROSTED HAWTHORN



Flowers

KANSAS HAWTHORN

never had a chance to grow to full maturity.

The fruit occurs in clusters on long stems attached to the twig and ripens in late fall well before the first frost. The fruit resembles very small crab apples and is a source of food for squirrels, raccoon, opossum, quail, wild turkey, deer, ruffed grouse, robin and purple finch.

The leaves, shed in winter, are borne alternate and are simple. They are for the most part toothed. The flower resembles an apple flower but is white and much smaller.

Like the apple, it is an alternate host for cedar-apple rust disease. Some trees are more susceptible than others. By late summer many leaves are discolored with yellow and brown

spots caused by the fungus. On ornamental cedars and junipers the disease can be controlled by spraying.

In identifying this tree, various characteristics are key features. *The bark is dark and scaled on the trunk. The limbs contain sharp thorns about 1½ inches long which are slightly curved. The fruit is like an apple but contains much less pulp.*

Hawthorn is primarily a wild-life tree. Occasionally it is used for ornamental purposes on lawns where the white and sometimes pinkish blossoms and red fruits offer two seasons of beauty. In some areas, abandoned fields are rapidly taken over by hawthorn. Because of this feature, it is not always welcomed by farmers.

BLACK CHERRY

Prunus serotina, Ehrh.

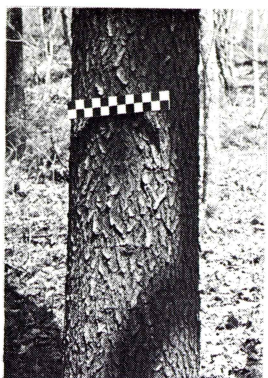
ALTHOUGH BLACK CHERRY can be found on a variety of soils in Missouri, it makes its best growth on deep, rich, alluvial soils. It can be

found in almost every county in the state. Black cherry is often found growing along with bitternut hickory, walnut, Northern red oak, white oak, sugar

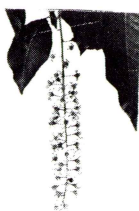
maple, and basswood. It often attains its greatest quality in competition for light with surrounding trees.

Black cherry can readily be

identified by horizontal lines called lenticels on reddish young twigs. Older bark consists of dark plates with turned back edges.



Flowers



Cherries



The leaves are elliptical in shape, finely toothed and have a leathery texture.

The fruit consists of many small cherries borne on a small pendulous stem in a grape-like cluster. Green at first, the cherries turn red and then, when fully ripe, they turn a blue-black in late summer. This is the period when quail, turkey, ruffed grouse and songbirds supplement their diets with the bitter, but edible, fruit.

The twigs, leaves, and bark of this tree contain a prussic acid which can cause cattle to bloat and die. Wilted leaves are usually responsible for livestock poisoning.

In Missouri, the demand for quality black cherry ranks second only to black walnut. Veneer, furniture and lumber is made from this tree. With a rich red color, the wood is easy to machine and holds its shape



well. Smaller branches, not large enough for lumber manufacture, can be used for wood turning or fuel since it produces a bright hot fire. Because of its durability it has long been used to back engraving plates for fine printing.

EASTERN REDBUD

Cercis canadensis, Linn.

EASTERN REDBUD LENDS a quaint charm to the Missouri hillsides in early spring when the pink hues of the flowers are in sharp contrast with the brown leaves covering the forest floor.

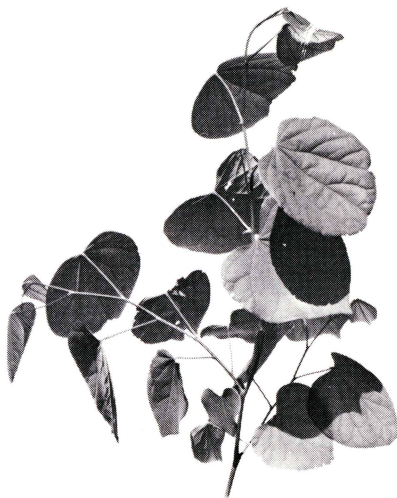
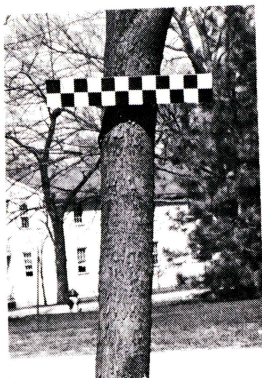
It is believed by some that George Washington and Thomas Jefferson had a hand in naming this tree. Legend has it that it was this tree upon which Judas Iscariot hanged himself. Each year in remorse it weeps tears of blood-like blossoms at Easter time. Blossom time coincides with that of serviceberry and wild plum. In most years it blooms slightly before dogwood.

This is a legume and the fruit

is a pod. The flat pod is two to three inches long and hangs onto the twigs throughout the winter. Bright reddish, pea-like blossoms are clustered along the twigs before the leaf buds unfold.

Heart-shaped leaves identify this tree. They are dark green in summer, turning yellow in autumn.

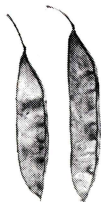
Bark is red-brown, separating into thin scales. Trees growing rapidly will produce heavy flaking of bark, giving the trunk a diseased appearance. Diameters



Flowers



Pods



seldom exceed six inches while heights rarely exceed 15 feet.

Eastern redbud is distributed over the entire state and often can be found growing in abandoned fields, in open woods, and

along fence rows. While it is a valuable and widely used ornamental, it has little value as a commercial timber tree because of its small size. However, its wood is a soft brown color, very

durable, hard, and takes a fine polish.

Beavers use the bark as a source of food while birds make the small, hard, bony seed a part of their wintertime diet.

BLACK LOCUST

Robinia pseudoacacia, Linn.

BLACK LOCUST IS A FAST growing, medium size tree which has been widely planted for windbreaks, soil erosion control, soil stabilization and fence posts. Although it will grow on depleted soils, it grows best on good soils. On poor soils, it is severely attacked by locust borers which frequently kill the tree by tunneling. It sprouts prolifically from root runners and can become a nuisance.

This tree, like redbud, is a legume, hence the fruit is a flat



Flowers



Pods

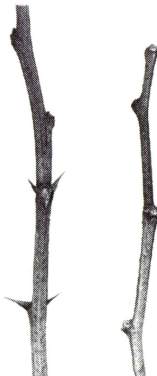


pod 3 to 4 inches long, remaining on the tree through winter. The black, bony seed inside the pod is eaten by squirrels.

The leaf is compound, having from 7 to 19 entire leaflets which are alternate, light green above and pale green underneath.

Branches are armed with a pair of short, sharp spines located at the base of each petiole. Mature bark resembles black, twisted rope.

Locust flowers form pendant clusters of honey-sweet white blossoms, spreading a fragrance of heavy perfume in late spring.



Because of the sweet flower scent, some people confuse this with its relative, the honey locust. Honey locust gets its name from the honey-like pulp of its large pods, often 12 to 18 inches long. *It is easily recognized by long, wicked thorns located on the trunk and branches.*

Insulator pins and fence posts

have been made from black locust because of its resistance to rot. In olden days the wood was used for fuel and cross ties.

The grub or larvae of the black locust borer tunnels through the central part of the stem, hollowing and weakening it. A strong wind can finish the job of breaking the main stem.

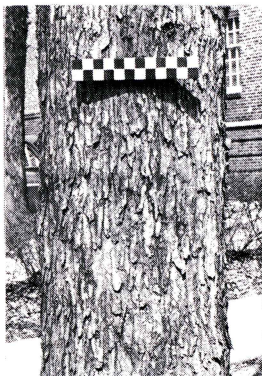
SILVER MAPLE

Acer saccharinum, Linn.

UNDER NATURAL CONDITIONS, silver maple is a bottomland tree while its cousin the sugar or hard maple tree is essentially a hill tree. Although there are several other maples in Missouri, only silver maple is commercially important. Sugar maple, so valuable in northern states, is usually too defective to be used in Missouri. Because of its rapid growth and ascending (often interlacing) branches, silver maple has been widely

planted as an ornamental on dry soils. It grows rapidly at first but is frequently beset by many insects and diseases. Ice storms have wrecked many beautiful maples.

The silvery underside of the leaves account for this tree's name. In a breeze the whole crown appears silvery green. The leaves are deeply lobed and almost lace-like. With flattened stalks they flutter with the slightest breeze. *The deep lobes and V-shaped bases of the leaves help distinguish them from the other maples.*



Winged seed



The reddish, glossy twigs are capped by rather blunt lobes. Clustered round blossom buds occur along the sides of older twigs. They bloom in the very early spring. Rather large, winged seeds occur in pairs. Children for decades have used these immature seeds as one-shot squirt guns and whistles.

While it is smooth and grey

on young trees, the bark becomes scaly on old trees.

Soft maple lumber is a popular furniture wood. The wood is light in color, strong for its weight, takes fasteners and glues well, and takes a satiny finish. It can be stained to imitate many other woods. It is used as a finish piece and in overstuffed furniture.

BLACKGUM

Nyssa sylvatica, Marsh.



BLACKGUM, A CLOSE relative to tupelo-gum, grows on better soils in the southeastern Ozarks. It tolerates shade and is frequently found growing with or under the oaks and pines.

Past woods fires have severely damaged most of the large gums. When the growing layer is destroyed, a creamy-white scar is produced, exposing fresh wood

which may be later infected by wood-rotting fungi.

Leaves are alternate, simple, oval-elliptical shaped without teeth. In the summer they are shiny dark green above and downy below. Blackgum leaves are usually the first to turn a bright scarlet or purple in late summer, well before the first frost.

The bark is deeply fissured, becoming nearly black and developing into quadrangular blocks.

The blue plum-like fruit has a stone or pit which is flattened, having 10 to 12 broad rounded ribs. Deer, wild turkey, mal-

lards, ruffed grouse, and many songbirds eat the fruit or leaves.

Blackgum logs are sawn into crating lumber, pallets, rollers and furniture stock. It is also used in papermaking. Although this tree is becoming more and

more important on the timber scene, cull trees are still deadened and blackgum mixed with pine is usually removed to favor the more valuable pine. Some should be left where greater variety of wildlife food is needed.

FLOWERING DOGWOOD

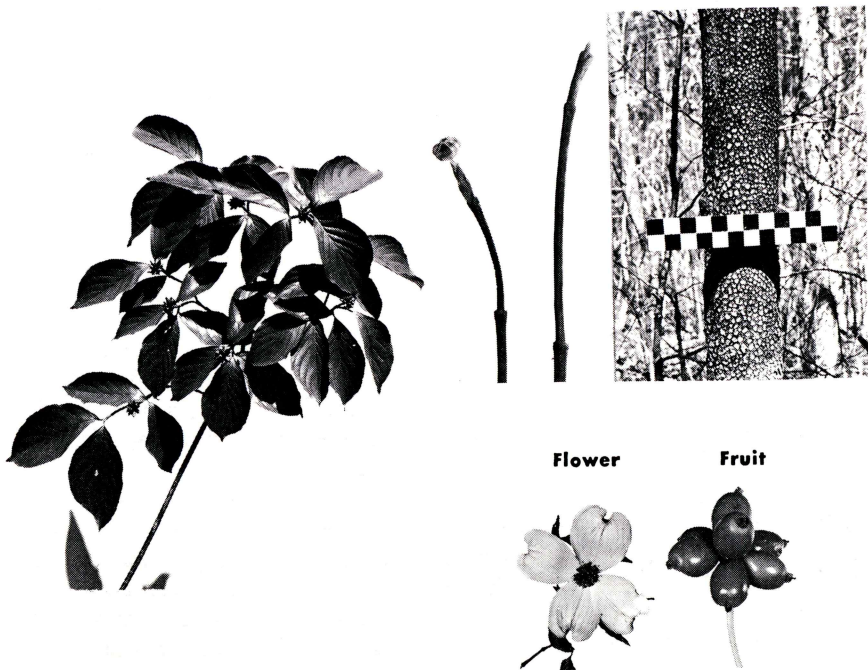
Cornus florida, Linn.

MISSOURI'S OFFICIAL state tree is the flowering dogwood. Of the several species of dogwood in Missouri, flowering dogwood is the best known and the only one with showy blossoms. It reaches its splendor in springtime on dry, acid, Ozark soils. Although the main distribution of dogwood is in the Ozarks, it also grows in several counties north of the Missouri River.

The most outstanding feature

of this tree is its showy, attractive flowering branches. Blossoms, which are so welcome, appear before the leaves in spring. These flowers are maltese cross-shaped and creamy white with a yellow center. The tips of the "petals" or bracts are notched and tinted with a rust color.

Leaves delay their appearance until the glory of the flowers fade, then extend to their fullest dimension of three to six inches long and approximately



half that wide. The bright green upper surface and the contrasting grey-green lower, the wedge-shaped base and acute tip, and the typical parallel curving veins makes the summer phase also one of great beauty. The fruit, consisting of four or five oblong drupes, first bright green in color but turning to a brilliant scarlet in autumn, adds to the ever-changing picture. They are especially sought by the wild turkey and other forest birds. Autumn paints the leaves slowly from deep purple to rich wine tones.

The opposite leaf buds are cone-shaped and the flower buds compressed and globe-shaped.

After the serviceberry or shadbush has bloomed, the flowering dogwood dots the Ozark hillsides in the spring. Heights seldom exceed 30 feet with the diameter averaging six to eight inches.

Many unusual uses have been found for this shock - resisting wood. The hard, close-grained characteristic of the white wood makes it very desirable for golf

club heads and handles for chisels and mallets. Other uses are wedges, pulleys, spindles, knitting needles, shuttles, sled runners and wood engraving blocks. In olden days its fine properties made it a favorite for distaffs, hog yokes, hay forks, hubs, for small wheels, machinery bearings and, even today, jewelers find it valuable for cleaning, without scratching, deep-seated lenses.

A story is told that the name was dogwood from the word dag which means dagger, skewer, or sharp-pointed instrument. Butchers once made skewers of dogwood because the characteristics of the wood adapted it so well to that use, and, in time, the name was changed by usage to dogwood. The Latin name, *Cornus*, means horn, and while the word horn is generally interpreted to read hardness it could be that the shape (being horn-shaped or sharp pointed) could go back to the skewer or dag.

PERSIMMON

Diospyros virginiana, Linn.

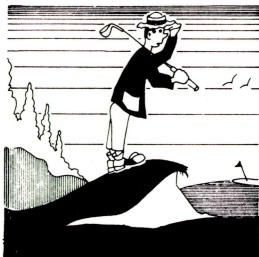
THIS REPRESENTATIVE OF the ebony group grows in all except the northwest portion of the state. While persimmon grows on many kinds of soils, it attains its greatest size on sandy, clay soil in bottoms. It is one of the first invaders of old fields with the seeds brought in by wild birds and animals. Sprout clumps are common in neglected pastures, old fields and fence rows.

The leaf is rather leathery and

dark green without teeth on the margin. Its average length is about 4 inches.

The tree is well known for its delicious orange fruit and bark, resembling alligator hide. Like black gum, persimmon is a prolific sprouter.

Fruit, buds and leaves are a source of food for deer, opossum, gray and fox squirrel, quail, raccoon, wild turkey, red and grey fox and coyote. Many birds make persimmon fruit a



USED FOR GOLF CLUB HEADS

part of their diet. It is very important as a wildlife food.

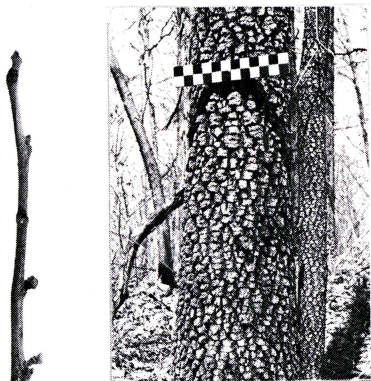
Persimmon wood is hard and dense. It is used for golf club heads, handles for files and carving tools, billiard cues, shuttles and mallets.

History records that Confederate soldiers boiled persimmon seeds as a substitute for coffee. When De Soto crossed the Mississippi, he observed that persimmon played an important role in the Indian diet. The

Lenape Indians with whom William Penn traded called persimmon "Pasimenan."

Apparently from experience, doughty Captain John Smith said, "If it is not ripe it will draw a man's mouth awrie with much torment." You will share Captain Smith's experience if you every try eating a green persimmon. It will really make your mouth pucker.

The Latin name means "Fruit of Zeus."



Fruit



Flower



WHITE ASH

Fraxinus americana, Linn.

ALMOST EVERY AMERICAN boy knows a great deal about white ash wood. He has felt the familiar "tock" and tingling jolt which accompanies the swinging of the ball bat made from white ash. White ash grows over most of the state on moist, deep, well-drained soils in small isolated stands. Other relatives found in Missouri are blue, green and pumpkin ash.

Winged seeds are borne in clusters on the twig. These are spread by wind or water or a combination of both.

Leaves are opposite and compound with 5 to 7 leaflets which are oval and usually smooth-edged.

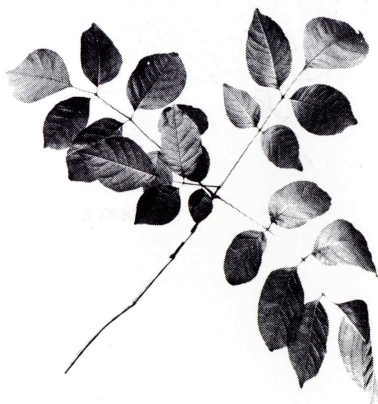
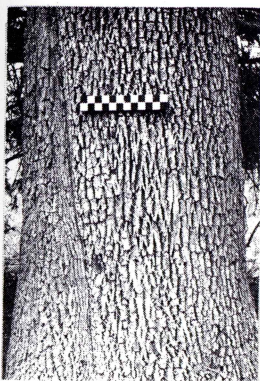
Smaller branches are stout, round and smooth. At the tip of the twig there are always

three buds, the large, brown, pyramidal terminal and two small lateral buds. On older portions of the tree, bark is thick, dark brown, or grey and broken into flat ridges.

Because of its toughness, strength, and flexibility, the wood is used in the manufacture of athletic equipment, machinery, tools and furniture. It is a beautiful, light-colored wood with a distinctive grain.

In Missouri, white ash seldom exceeds 100 feet in height and 2½ feet in diameter. Because it is so hardy and has good form, it has been widely planted as an ornamental tree. It is rarely planted in forest plantations.

Ash is a lover of light, therefore it will not grow rapidly under shaded conditions.



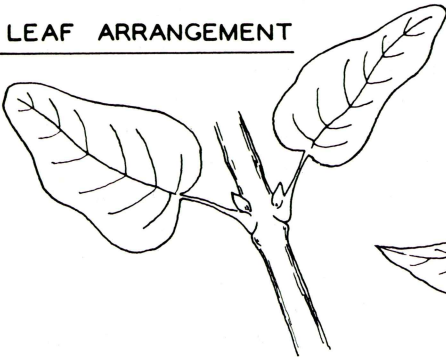
Flowers

Winged seeds

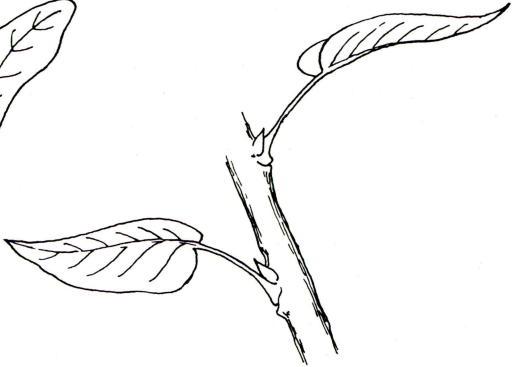


LEAF TYPES

LEAF ARRANGEMENT



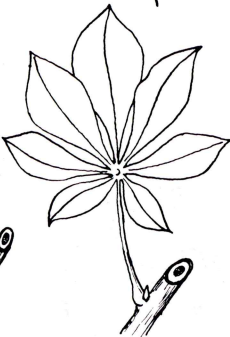
OPPOSITE



ALTERNATE

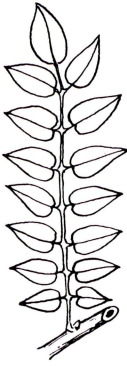
LEAF COMPOSITION

SIMPLE

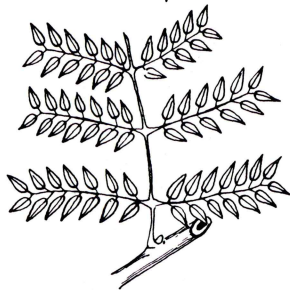


PALMATE

COMPOUND



PINNATE



DOUBLE PINNATE

